FIG. 1

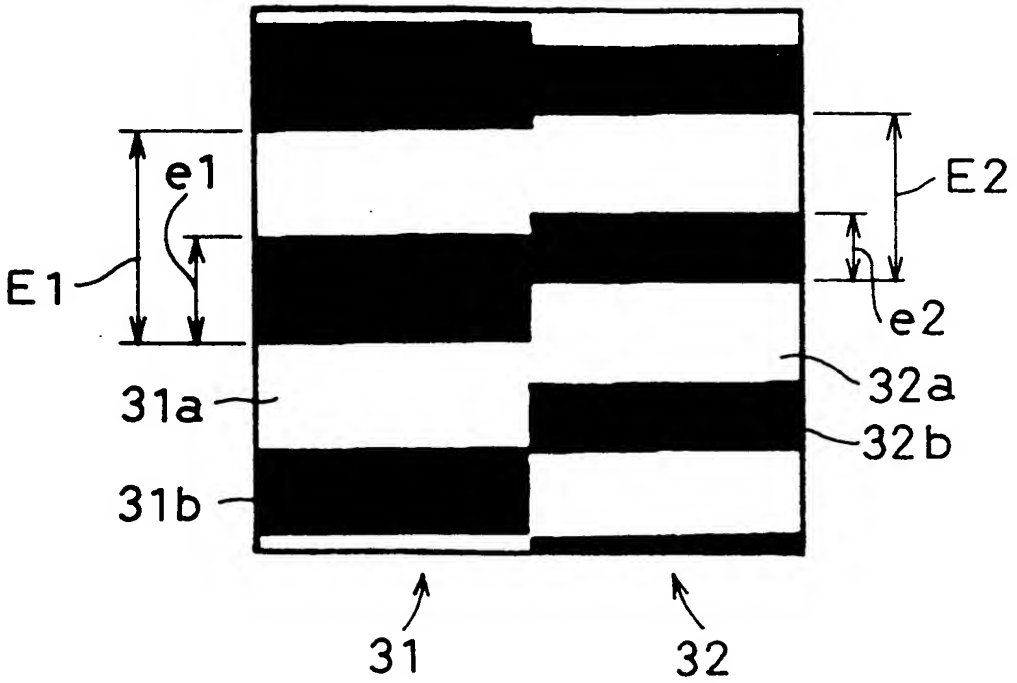

e1
E1
E2
e2
31a
31b
32a
32b
31
32

FIG. 2

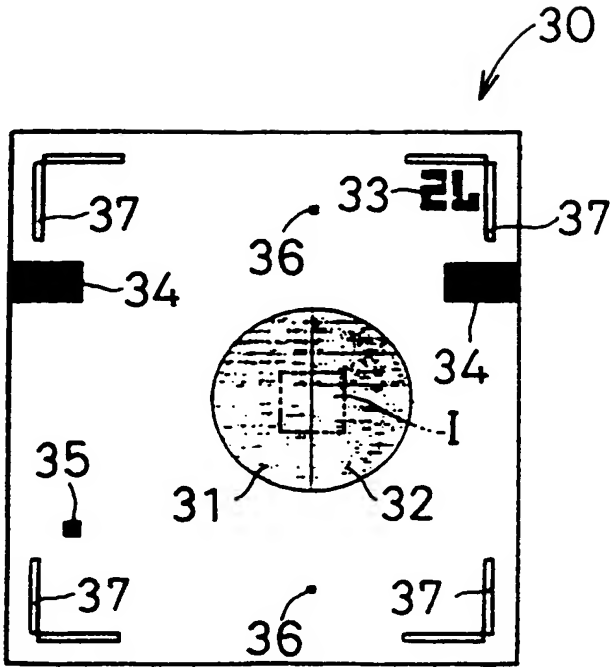

30
37
33
21
37
36
34
34
I
35
31
32
37
37
36

FIG. 3

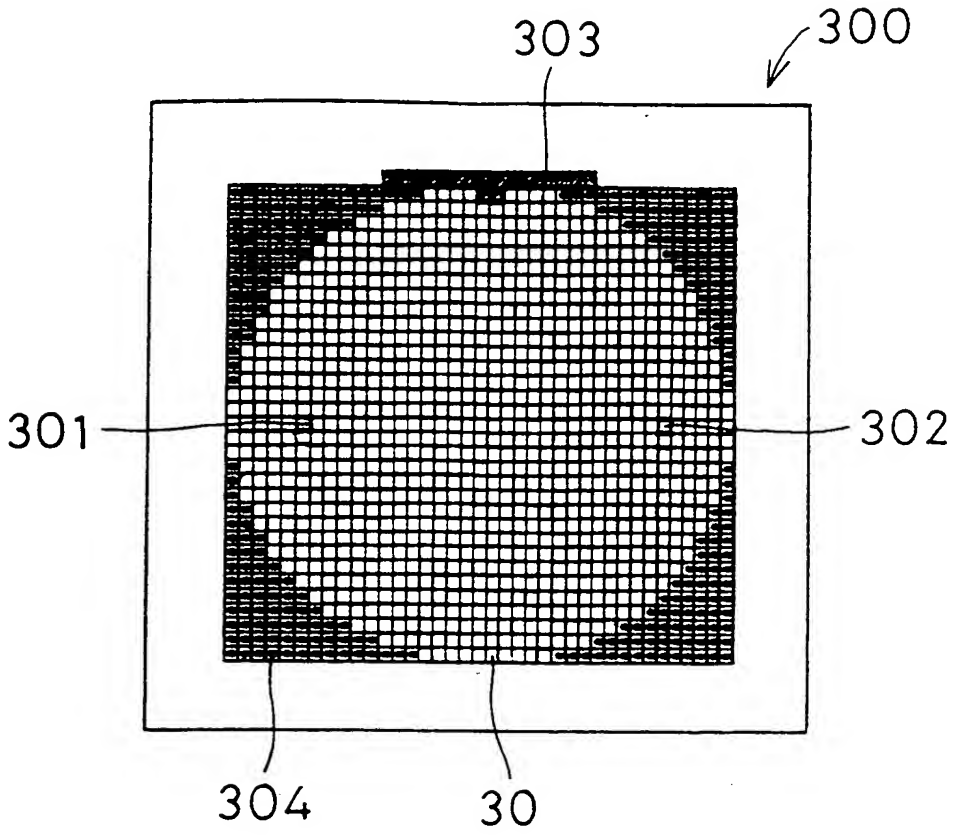


FIG. 4

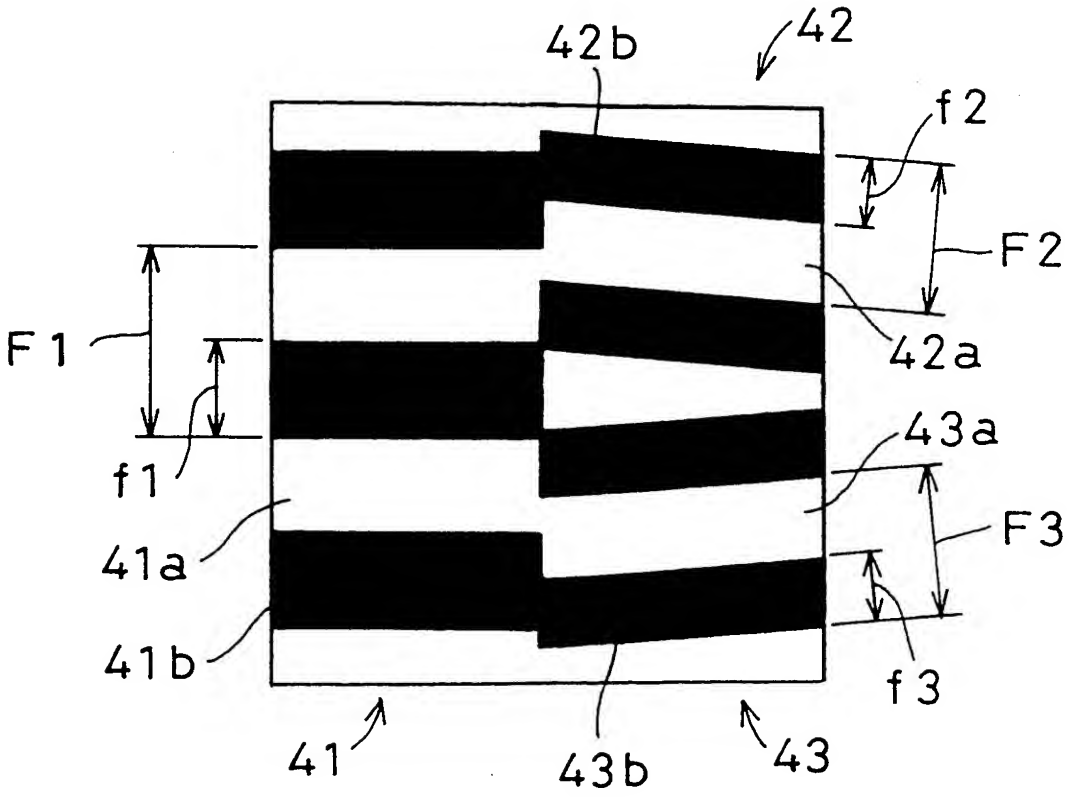


FIG. 5

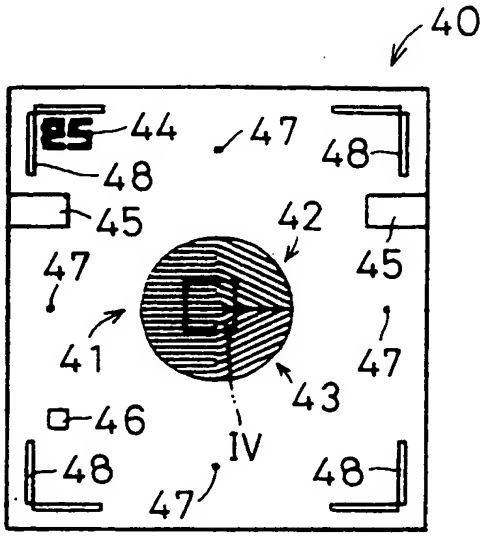


FIG. 6

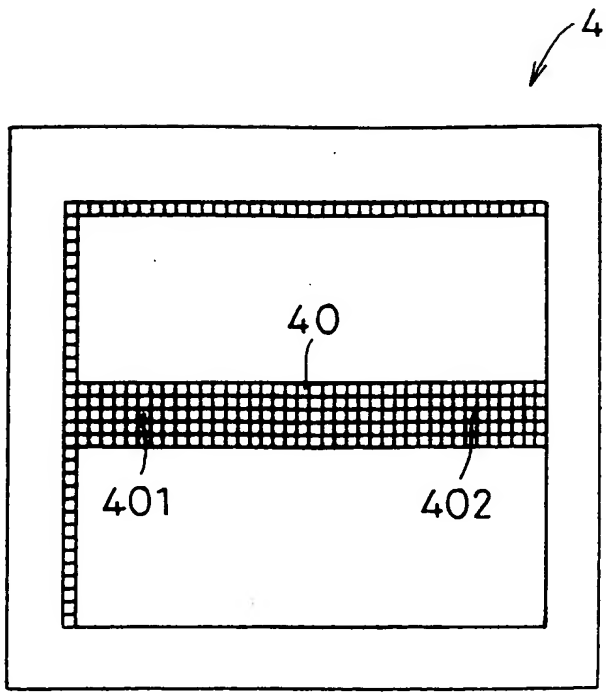
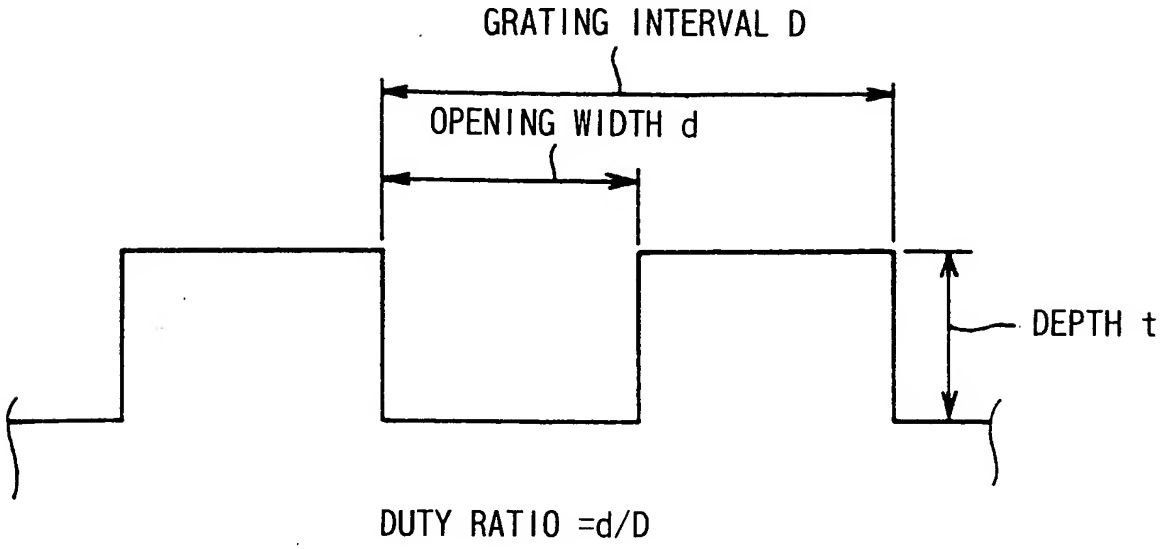
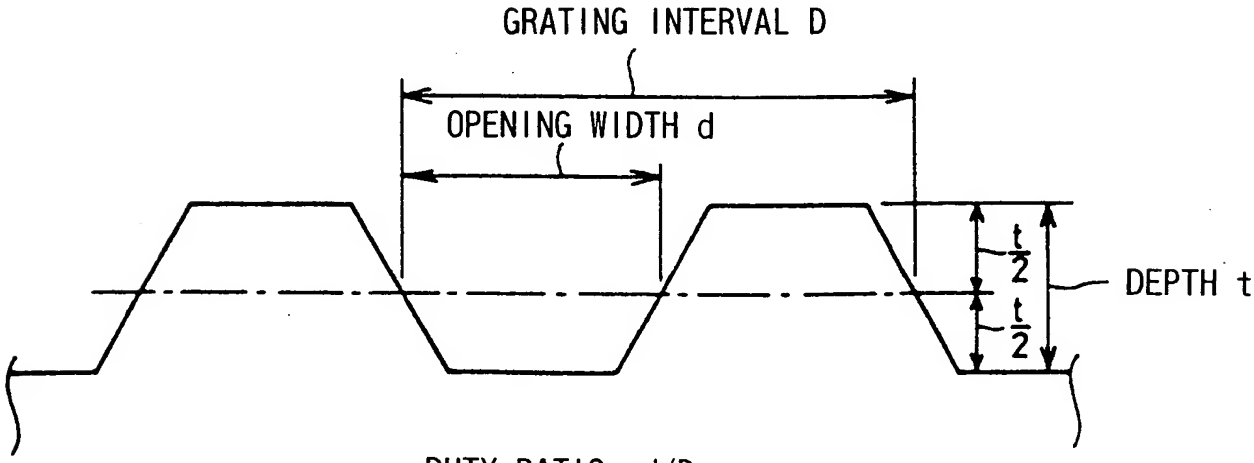


FIG. 7A



DUTY RATIO =d/D

FIG. 7B



DUTY RATIO =d/D

FIG. 8

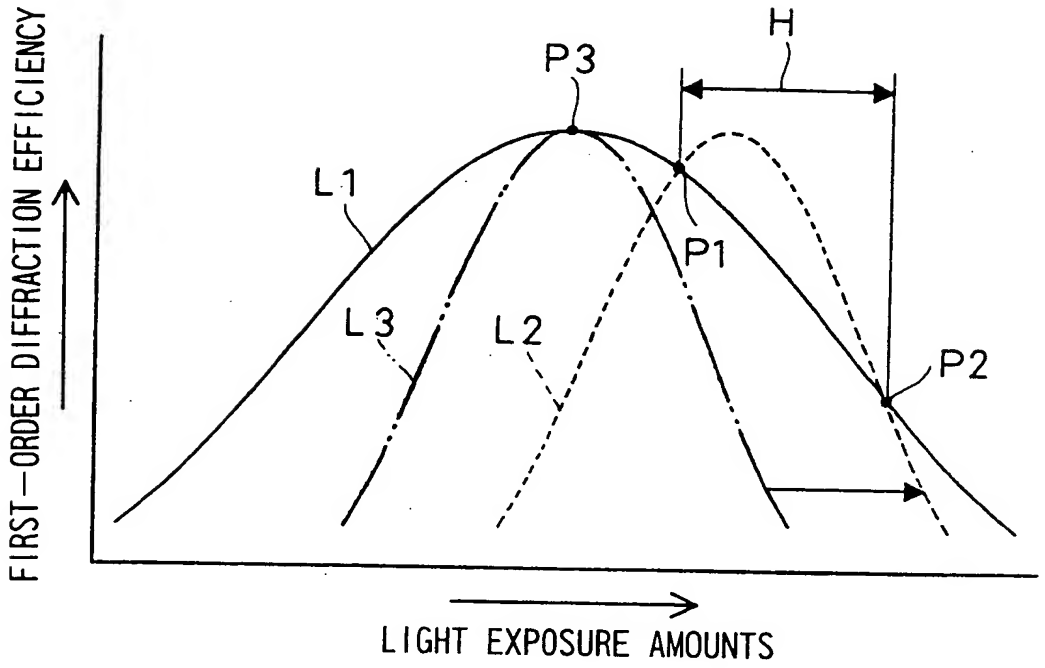

FIRST-ORDER DIFFRACTION EFFICIENCY
H
P3
L1
P1
L3
L2
P2
LIGHT EXPOSURE AMOUNTS

FIG. 9

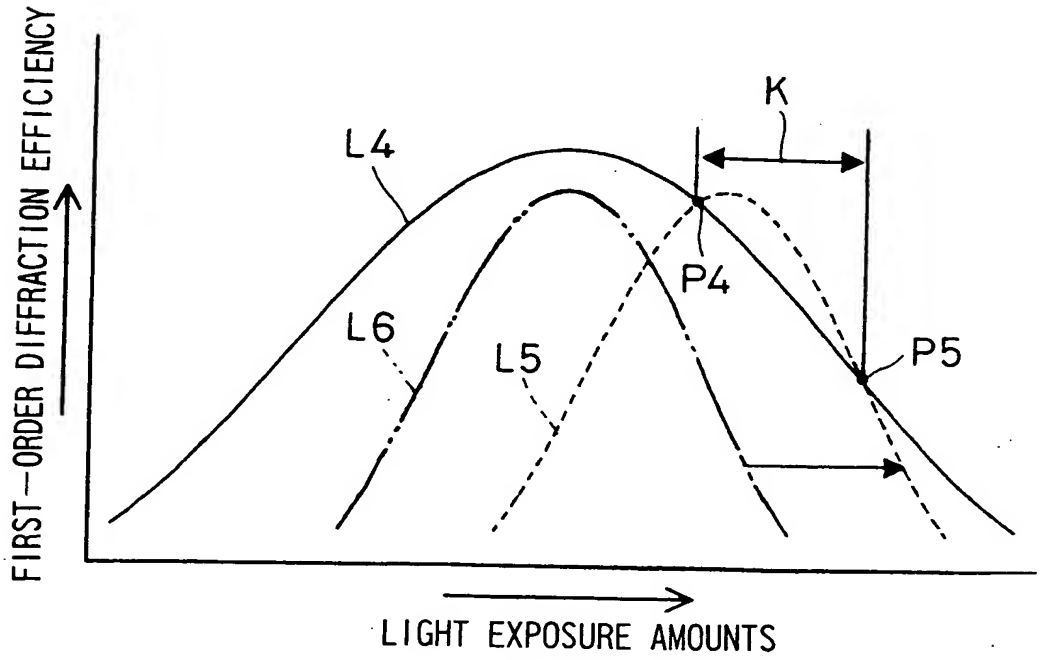

FIRST-ORDER DIFFRACTION EFFICIENCY
K
L4
P4
L6
L5
P5
LIGHT EXPOSURE AMOUNTS

FIG. 10

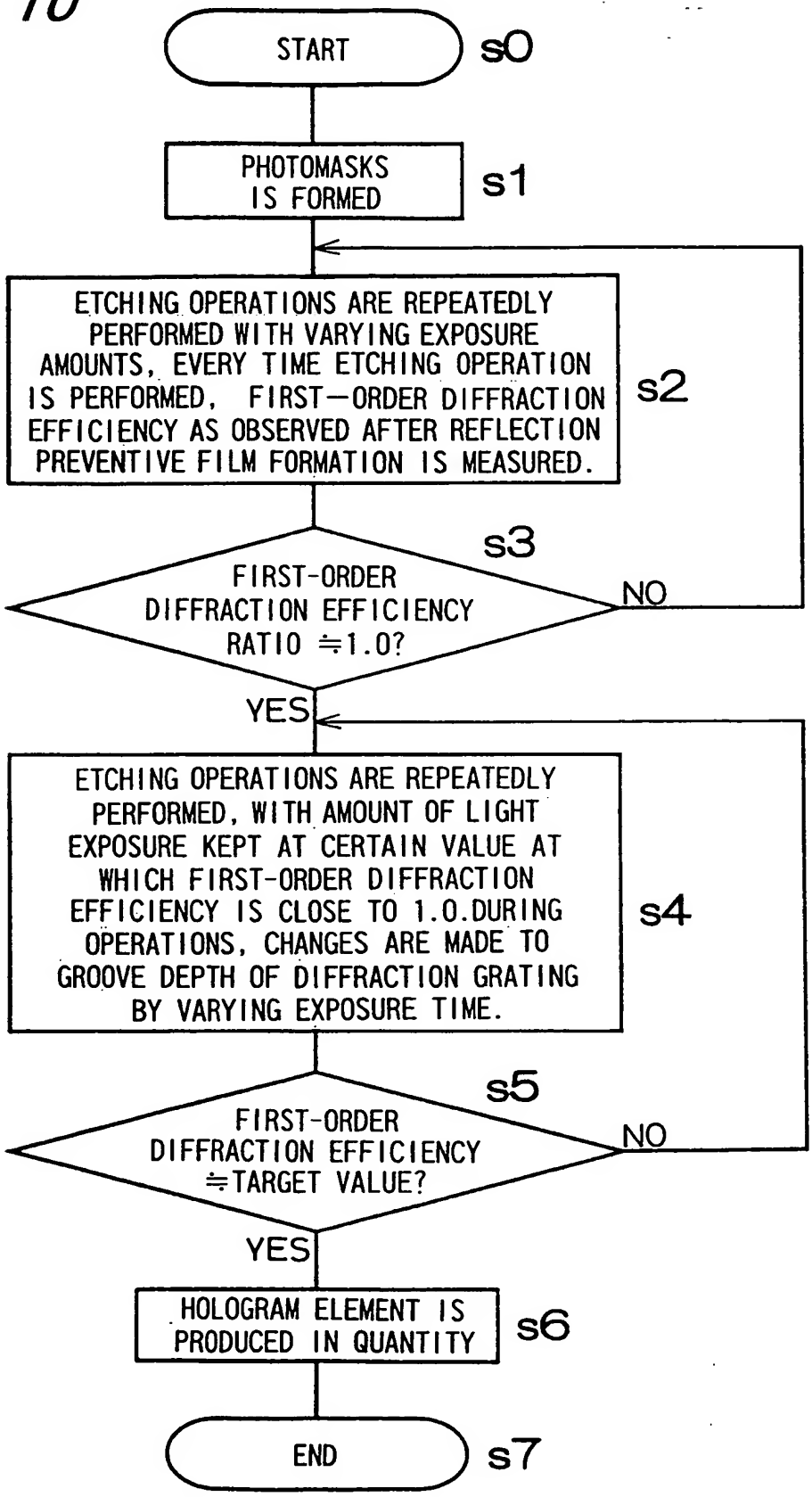

START
s0
PHOTOMASKS IS FORMED
s1
ETCHING OPERATIONS ARE REPEATEDLY PERFORMED WITH VARYING EXPOSURE AMOUNTS, EVERY TIME ETCHING OPERATION IS PERFORMED, FIRST-ORDER DIFFRACTION EFFICIENCY AS OBSERVED AFTER REFLECTION PREVENTIVE FILM FORMATION IS MEASURED.
s2
s3
FIRST-ORDER DIFFRACTION EFFICIENCY RATIO ≒1.0?
NO
YES
ETCHING OPERATIONS ARE REPEATEDLY PERFORMED, WITH AMOUNT OF LIGHT EXPOSURE KEPT AT CERTAIN VALUE AT WHICH FIRST-ORDER DIFFRACTION EFFICIENCY IS CLOSE TO 1.0.DURING OPERATIONS, CHANGES ARE MADE TO GROOVE DEPTH OF DIFFRACTION GRATING BY VARYING EXPOSURE TIME.
s4
s5
FIRST-ORDER DIFFRACTION EFFICIENCY ≒TARGET VALUE?
NO
YES
HOLOGRAM ELEMENT IS PRODUCED IN QUANTITY
s6
END
s7

FIG. 11

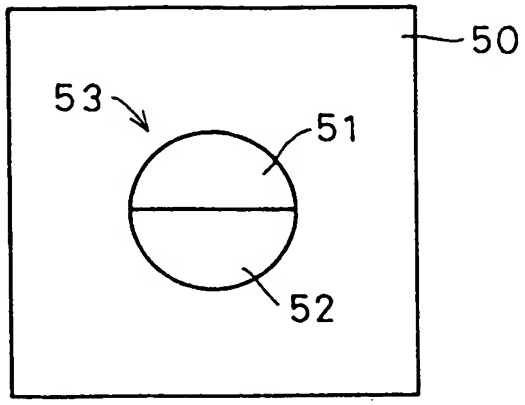


FIG. 12

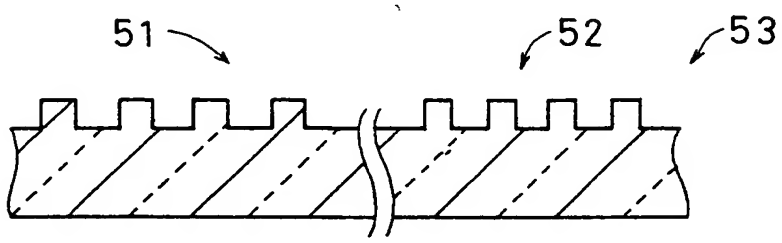


FIG. 13

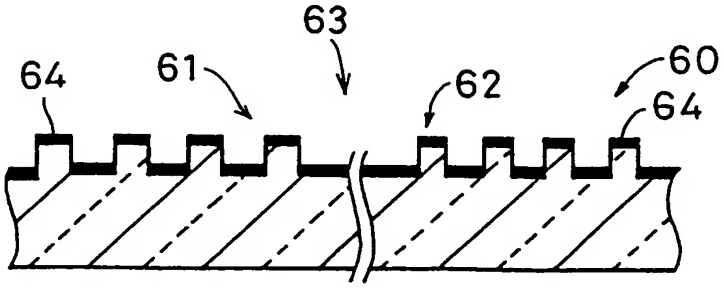


FIG. 14

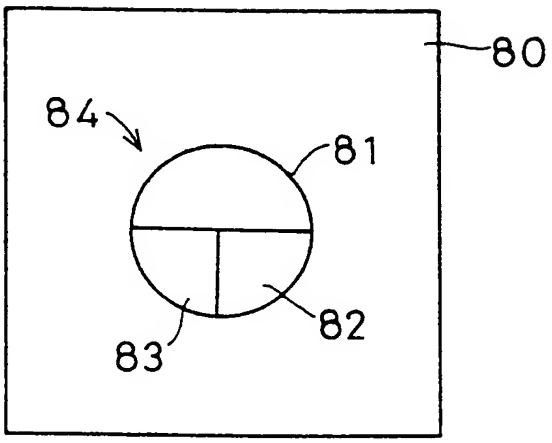


FIG. 15 PRIOR ART

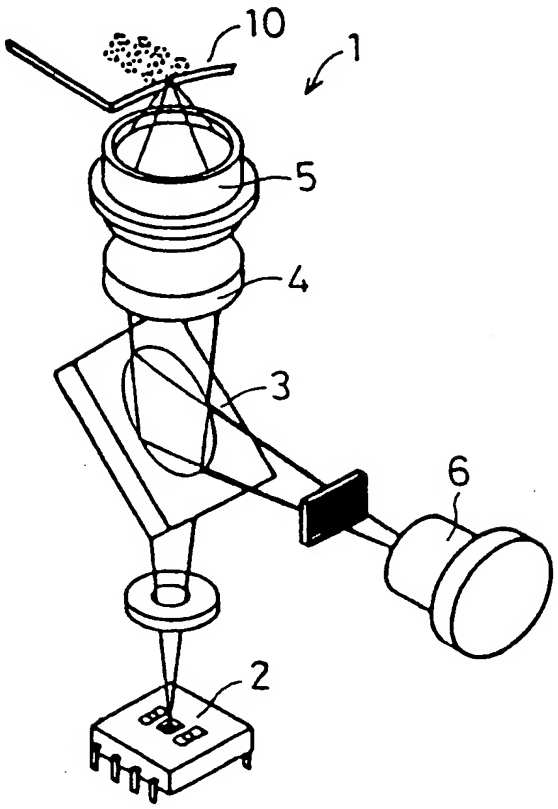


FIG. 16 PRIOR ART

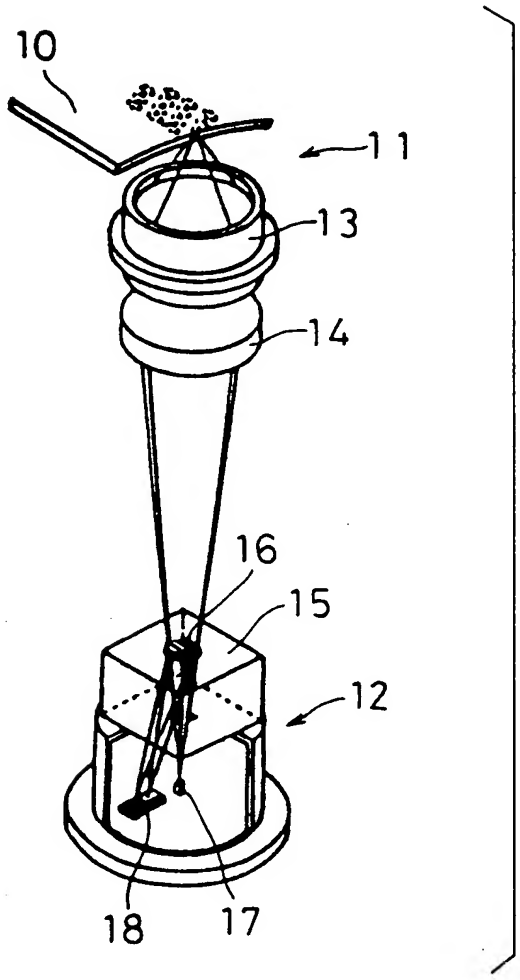


FIG. 17A
PRIOR ART

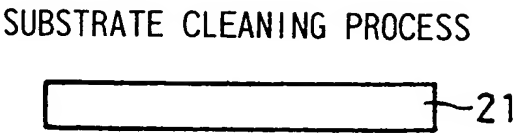


FIG. 17B
PRIOR ART

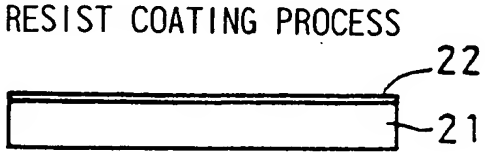


FIG. 17C
PRIOR ART

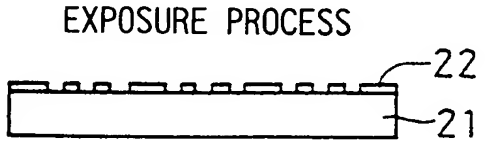


FIG. 17D
PRIOR ART

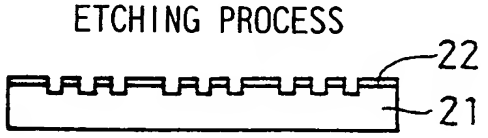


FIG. 17E
PRIOR ART

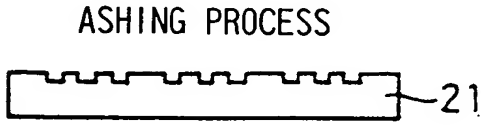


FIG. 17F
PRIOR ART

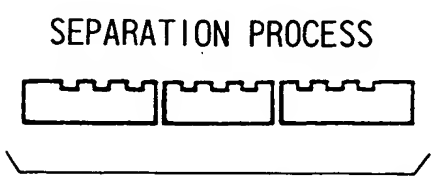


FIG. 18 PRIOR ART

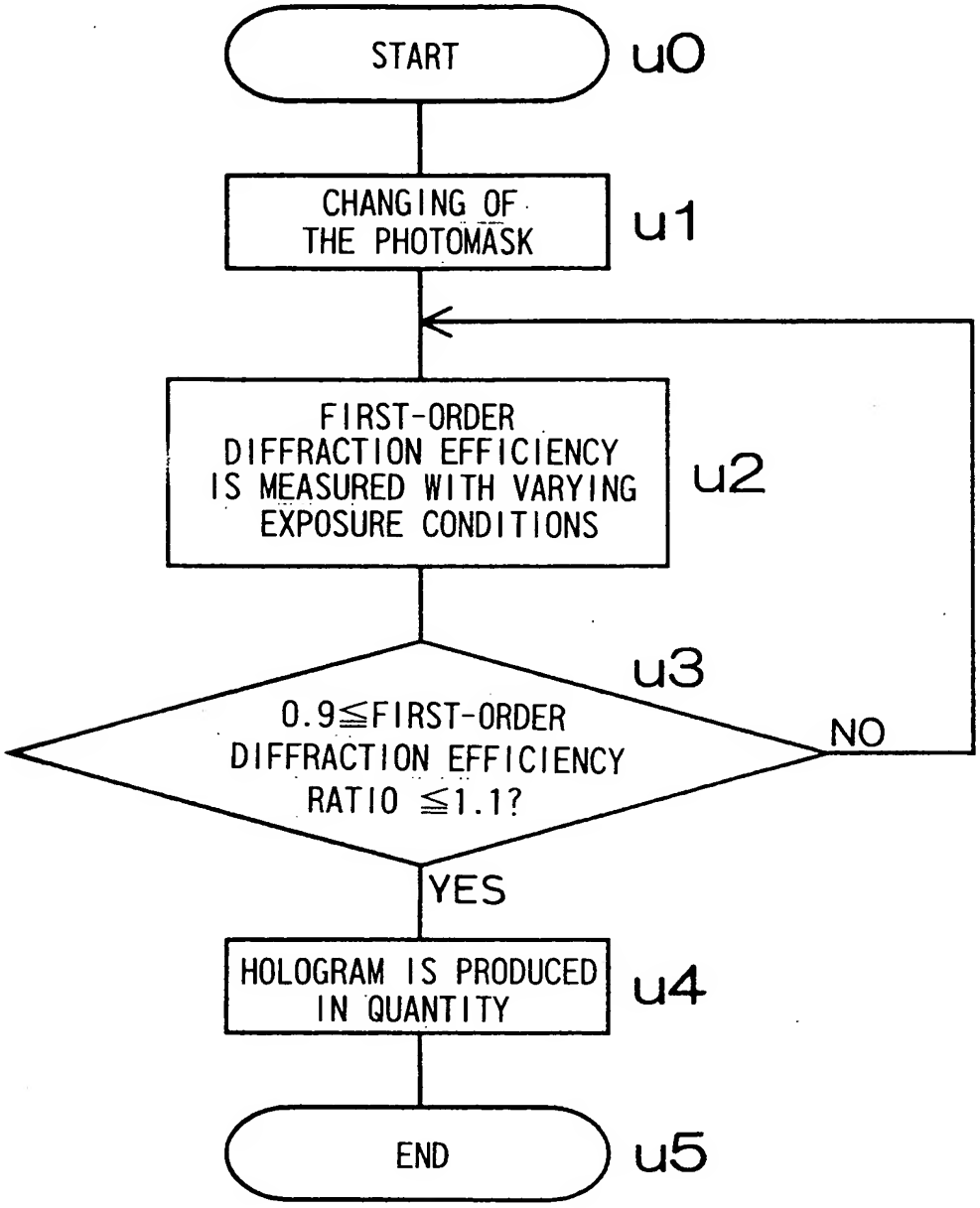


FIG. 19A PRIOR ART

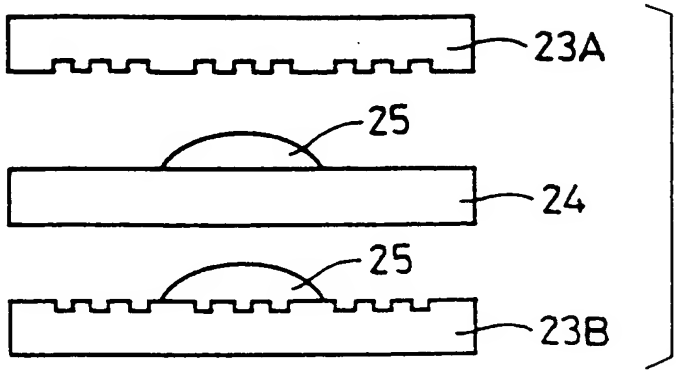


FIG. 19B PRIOR ART

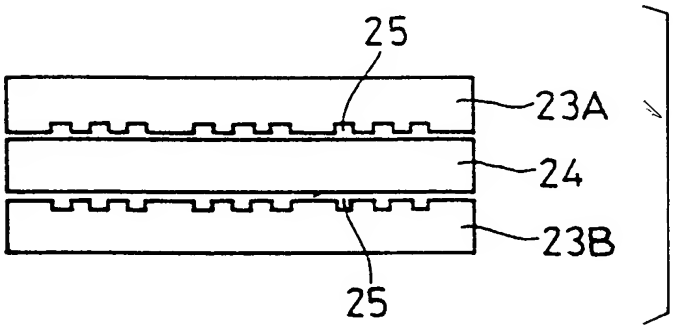


FIG. 19C PRIOR ART

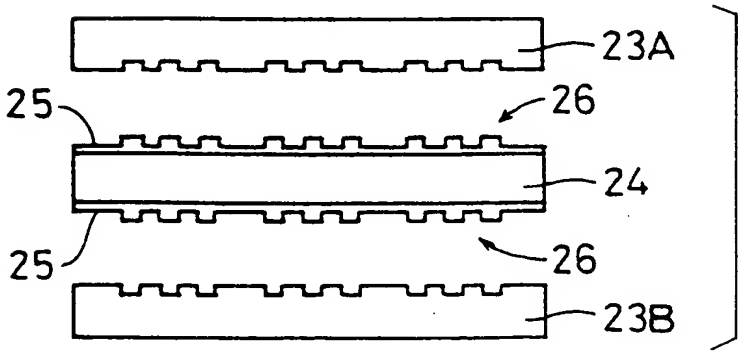


FIG. 20 PRIOR ART

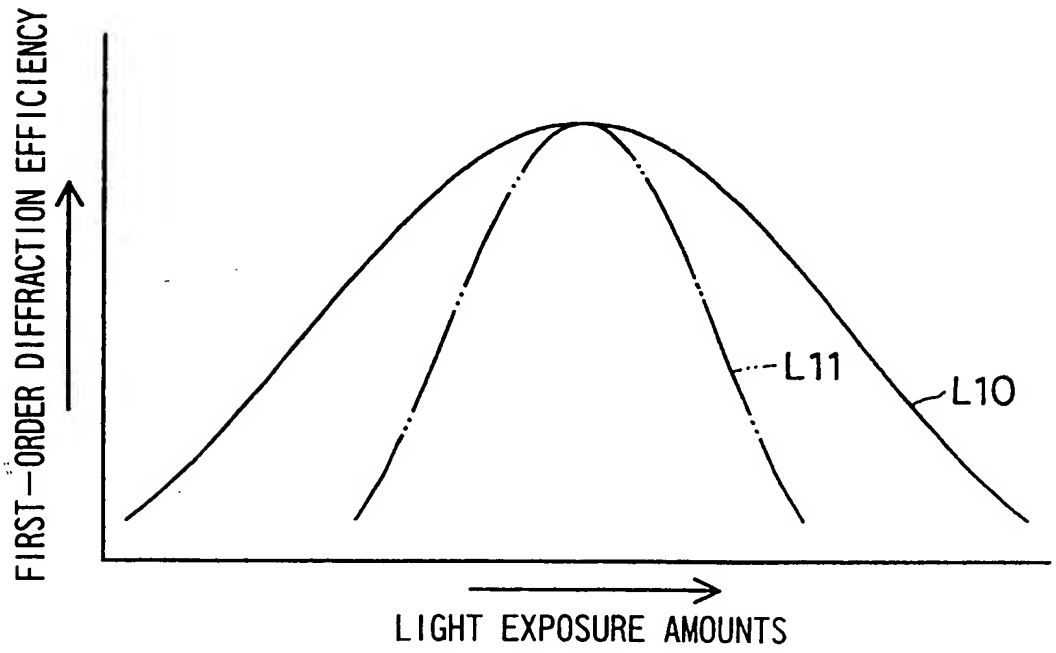
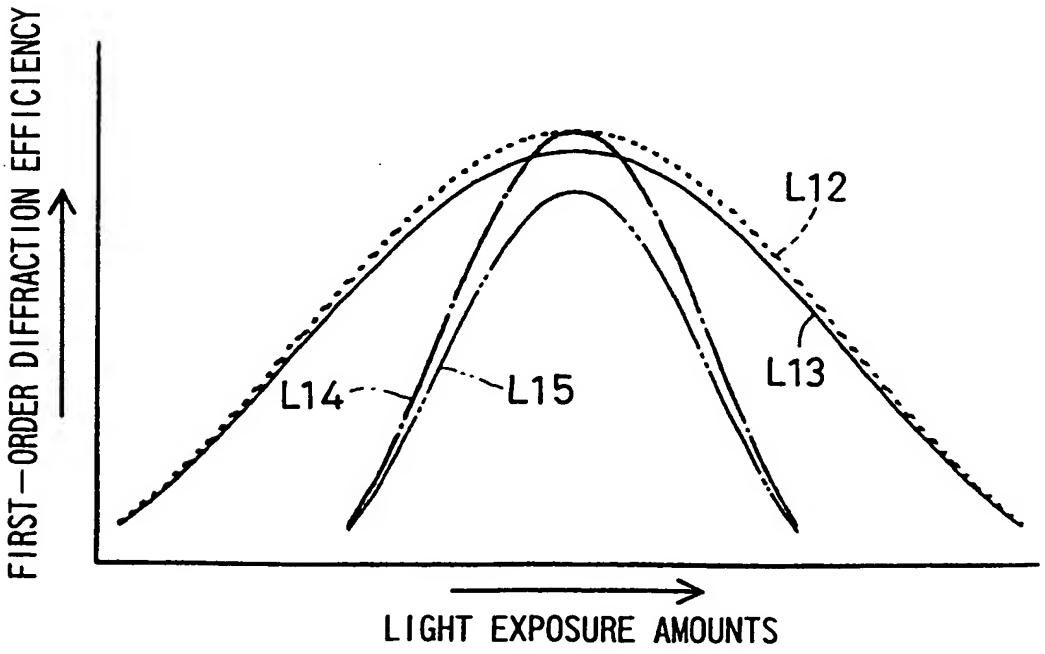



FIG. 21 PRIOR ART